

### ABSTRACT OF THE DISCLOSURE

A system and method for accurately determining  $E_b/N_0$  information for a signal transmitted by a second communications station, via electromagnetic wave signals, to a first communications station. The system involves a noise  
5 generating subsystem for generating a known quantity of noise that is applied to the received signal to create a composite signal. Signal attenuators are used to define a known operating point for the composite signal. A receiver at the first communications station monitors the signal and provides a downlink loss representative of rain attenuation affecting the signal. A demodulator  
10 generates an  $E_b/N_0$  value of the composite signal which is then output to a computer. The computer extrapolates, from the composite signal and the downlink loss, a highly accurate  $E_b/N_0$  value which is not influenced by atmospheric conditions or by losses introduced by signal components of the system itself.

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